

AMENDMENTS TO THE CLAIMS:

1. (Currently amended) A statistical multiplex transmission system for use in a network which includes a first local area asynchronous transfer mode (ATM) network including having a plurality of first terminal devices, a second local area ATM network including having a plurality of second terminal devices, and a public ATM network connected to said first and second ATM networks, comprising:

a first multiplex gateway device for connecting said first local area ATM network and said public ATM network;

a second multiplex gateway device for connecting said second local area ATM network and said public ATM network,

wherein said first and second multiplex gateway devices receive ATM transmission signals from said first and second local area ATM networks, respectively, and perform a statistical multiplexing process of said ATM transmission signals to generate transmission statistical multiplex signals, and transmitting said transmission statistical multiplex signals to said public ATM network.

2. (Currently amended) A statistical multiplex transmission system as claimed in claim 1, wherein said first and second multiplex gateway devices transmit said transmission statistical multiplex signals by a piece-wise constant bit rate transmission system including having a transmission rate after statistical multiplexing process which varies in a predetermined time interval.

3. (Previously presented) A statistical multiplex transmission system as claimed in claim 2, wherein said first and second multiplex gateway devices receive said transmission statistical multiplex signals to separate said transmission statistical multiplex signals, and generate a plurality of receiving ATM signals, and

wherein said first and second multiplex gateway devices transmit said receiving ATM signals to said first and second terminal devices through said first and second local area ATM networks, respectively.

4. (Previously presented) A statistical multiplex transmission system as claimed in claim 3, wherein said first and second multiplex gateway devices comprise:

first means for calculating statistical information represented by a mean rate and a peak cell rate of ATM cells in said ATM transmission signals; and

second means for performing a multiplexing processing of said ATM cells according to said statistical information, and for transmitting said transmission statistical multiplex signals to said public ATM network.

5. (Previously presented) A statistical multiplex transmission system as claimed in claim 4, wherein said second means includes:

third means for conducting rate addition after statistical multiplexing according to said statistical information and for determining said rate addition result;

fourth means for calculating a required piece-wise constant bit rate on the basis of said rate addition result, and for performing cell multiplex control on the basis of said piece-wise constant bit rate; and

fifth means for transmitting said transmission statistical multiplex signal according to said cell multiplex control.

6. (Previously presented) A statistical multiplex transmission system as claimed in claim 5, wherein said fifth means receives said transmission statistical multiplex signal to separate said transmission statistical multiplex signal, and generates a receiving ATM signal.

7. (Previously presented) The system of claim 1, further comprising:
a control unit operably connected to said first multiplex gateway device,
wherein the control unit re-negotiates a transmission rate of said transmission statistical multiplex signals after said statistical multiplexing process, in a predetermined time interval, through adaptive control of parameters acquired from the transmission statistical multiplex signals.

8. (Previously presented) The system of claim 1, wherein the plurality of first and second terminal devices are International Telecommunications Union (ITU) recommendation H.310 compliant.

9. (Previously presented) The system of claim 1, further comprising:

a statistical multiplexing control unit, operably connected to one of the first and second multiplex gateway devices, for performing a rate addition after said statistical multiplexing process according to statistical information from said multiplex signals.

10. (Previously presented) The system of claim 9, further comprising:

a piece-wise constant bit rate control unit, operably connected to the statistical multiplexing control unit, for receiving the rate addition calculation from said statistical multiplexing control unit, and

calculating a piece-wise constant bit rate for transmission of said statistical multiplex signals to said public ATM network.

11. (Previously presented) The system of claim 9, further comprising:

an ATM transmission line unit, operably connected to the statistical multiplexing control unit, for calculating statistical information of ATM cells in said ATM transmission signals, and

transmitting the statistical information and the ATM cells to an ATM cell multiplexing/demultiplexing unit.

12. (Previously presented) The system of claim 11, wherein the ATM cell multiplexing/demultiplexing unit is operably connected to one of the first and second

multiplex gateway devices, and performs cell multiplexing control on the basis of the piece-wise constant bit rate, and

wherein the ATM cell multiplexing/demultiplexing unit transmits the transmission statistical multiplex signals to the statistical multiplexing control unit.

13. (Currently amended) A statistical multiplex transmission system for use in a network, comprising:

a first local area Asynchronous Transfer Mode (ATM) network including ~~having~~ a plurality of first terminal devices;

a second local area ATM network including ~~having~~ a plurality of second terminal devices;

a public ATM network connected to said first and second ATM networks;

a first multiplex gateway device for connecting said first local area ATM network and said public ATM network;

a second multiplex gateway device for connecting said second local area ATM network and said public ATM network,

wherein said first and second multiplex gateway devices receive ATM transmission signals from said first and second local area ATM networks, respectively, and perform a statistical multiplexing process of said ATM transmission signals to generate statistical multiplex transmission signals, and transmitting said statistical multiplex transmission signals to said public ATM network, and

wherein said first and second multiplex gateway devices transmit said statistical multiplex transmission signals by a piece-wise constant bit rate transmission system including having transmission rate after statistical multiplexing process which varies in a predetermined time interval.

14. (Previously presented) The system of claim 13, further comprising:
a control unit, operably connected to said first multiplex gateway device,
wherein the control unit re-negotiates a transmission rate of said transmission statistical multiplex signals after said statistical multiplexing process, in a predetermined time interval, through adaptive control of parameters acquired from the transmission signals.

15. (Previously presented) The system of claim 13, wherein the plurality of first and second terminal devices are International Telecommunications Union (ITU) recommendation H.310 compliant.

16. (Previously presented) The system of claim 13, further comprising:
a statistical multiplexing control unit, operably connected to the first or second multiplex gateway device, for performing a rate addition after said statistical multiplexing process according to statistical information from said multiplex signals.

17. (Previously presented) The system of claim 16, further comprising:

a piece-wise constant bit rate control unit, operably connected to the statistical multiplexing control unit, for receiving the rate addition calculation from said statistical multiplexing control unit and calculating a piece-wise constant bit rate for transmission of said statistical multiplex signals to said public ATM network.

18. (Previously presented) The system of claim 17, further comprising:

an ATM transmission line unit, operably connected to the statistical multiplexing control unit, for calculating statistical information of ATM cells in said ATM transmission signals, and transmitting the statistical information and the ATM cells to an ATM cell multiplexing/demultiplexing unit.

19. (Previously presented) The system of claim 18, wherein the ATM cell multiplexing/demultiplexing unit is operably connected to one of said first and second multiplex gateway devices, and performs cell multiplexing control on the basis of the piece-wise constant bit rate, and

wherein the ATM cell multiplexing/demultiplexing unit transmits the transmission statistical multiplex signals to the statistical multiplexing control unit.

20. (Previously presented) A method for statistical multiplex data transmission in an asynchronous transfer mode (ATM) network, comprising:

connecting a first local area ATM network to a plurality of first terminal devices;

connecting a second local area ATM network to a plurality of second terminal devices;

connecting a public ATM network to said first and second ATM networks;

connecting a first multiplex gateway device to said first local area ATM network and said public ATM network;

connecting a second multiplex gateway device to said second local area ATM network and said public ATM network;

receiving ATM transmission signals from said first and second local area ATM networks into said first and second multiplex gateway devices, respectively; and

performing a statistical multiplexing process of said ATM transmission signals to generate transmission statistical multiplex signals, and transmitting said transmission statistical multiplex signals to said public ATM network,

wherein said first and second multiplex gateway devices transmit said transmission statistical multiplex signals by use of a piece-wise constant bit rate transmission system with a transmission rate that varies in a predetermined time interval after the statistical multiplexing process.

21. (Previously presented) The method of claim 20, further comprising:
performing a rate addition after said statistical multiplexing process according to statistical information from said multiplex signals.
22. (Previously presented) The method of claim 20, further comprising:
receiving the rate addition calculation from said statistical multiplexing control unit and calculating a piece-wise constant bit rate for transmission of said statistical multiplex signals to said public ATM network.
23. (Previously presented) The system of claim 22, further comprising:
calculating statistical information of ATM cells in said ATM transmission signals, and transmitting the statistical information and the ATM cells to an ATM cell multiplexing/demultiplexing unit.
24. (Previously presented) The system of claim 23, further comprising:
performing cell multiplexing control on the basis of the piece-wise constant bit rate.